



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,379	03/17/2004	Patrizio Vinciarelli	00614-136002	3813
26161	7590	03/15/2005	EXAMINER	
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110			STERRETT, JEFFREY L	
			ART UNIT	PAPER NUMBER
			2838	

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/802,379	Applicant(s) VINCIARELLI, PATRIZIO	
	Examiner Jeffrey L. Sterrett	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2/14/05.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-91 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-91 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                                              |                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                                             | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/14/05</u> . | 6) <input type="checkbox"/> Other: _____                                                |

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 5, 7-10, 19, 23, 25-28, 36, 37, 40, 41, 44, 46-55, 57-74, 76, 85, and 89-91 are rejected under 35 U.S.C. 102(b) as being anticipated by Steigerwald et al (US 5,274,539).

Steigerwald et al discloses a power distributing apparatus comprising a first regulator (30), a bus, and voltage transformation modules (20, see any of figures 4 or 6-9) including switch (Qa and Qb), transformers (T1 and T2), and rectifiers (SRa and SRb).

3. Claims 2, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a power distributing apparatus as recited by claims 2, 17, and 20 except for specifying that the voltage transformation module has a conversion efficiency greater than 80%. Voltage transformation modules having a conversion efficiency greater than 80% were well known and old in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to have constructed the power distributing apparatus of Steigerwald et al to have any desired conversion efficiency known and old in the art, such as greater than 80%, since this is part and parcel of the normal process of making a specific power supply for a specific purpose.

4. Claims 3 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a power distributing apparatus as recited by claims 3 and 21 except for specifying that the primary switches operate in a series of operating cycles characterized by power transfer and energy recycling intervals. Operating the primary switches of a power distributing apparatus in a series of operating cycles characterized by power transfer and energy recycling intervals was an old and known expedient in the art at the time of the invention that increases the conversion efficiency. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power distributing apparatus of Steigerwald et al by operating the primary switches in a series of operating cycles characterized by power transfer and energy recycling intervals in order to increase the conversion efficiency.

5. Claims 4, 45, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a power distributing apparatus as recited by claims 4, 45, and 56 except for specifying that the voltage transformation module operates at or above 500 KHz. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power distributing apparatus of Steigerwald et al by specifying that the voltage transformation module operates at or above 500 KHz since it has been held that where the general conditions of the claimed invention are disclosed in the prior art discovering the optimum or workable ranges of result effective variables involves only routine skill in the art.

6. Claims 6, 11, 15, 16, 24, 29, 34, 35, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a power distributing apparatus as recited by claims 6, 11, 15, 16, 24, 29, 34, 35, 42, and 43 except for controlling the bus voltage using a load voltage feedback signal. Controlling the bus voltage provided by a preregulator using a load voltage feedback signal was an old and known expedient in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power distributing apparatus of Steigerwald et al by controlling the bus voltage using a load voltage feedback signal in order to move the regulation of the output voltage back to a previous conversion stage.

7. Claims 12-14 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a power distributing apparatus as recited by claims 12-14 and 30-32 except for utilizing either input or output switches to protect against voltage transformation module or bus faults. Utilizing input or output switches to protect against voltage faults were old and known expedient in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power distributing apparatus of Steigerwald et al by utilizing input or output switches in order to protect against voltage transformation module or bus faults.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al in view of Kajouke et al (US 6,154,381).

Steigerwald et al teaches a power distributing apparatus as recited by claim 18 except for utilizing the power distributing apparatus in a vehicle. Kajouke et al teaches

utilizing a power distributing apparatus in a vehicle was an old and known expedient in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the power distributing apparatus of Steigerwald et al by utilizing in a vehicle order as the necessary power distributing apparatus.

9. Claims 22 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a power distributing apparatus as recited by claim 22 and 75 except for specifying that the primary switches operate in a series of operating cycles characterized by power transfer and energy recycling intervals, have a period less than 2 microseconds, and that the voltage transformation modules have a power density greater than 250 Watts/ci. Operating the primary switches of a power distributing apparatus in a series of operating cycles characterized by power transfer and energy recycling intervals was an old and known expedient in the art at the time of the invention that increases the conversion efficiency. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power distributing apparatus of Steigerwald et al by operating the primary switches in a series of operating cycles characterized by power transfer and energy recycling intervals in order to increase the conversion efficiency and it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power distributing apparatus of Steigerwald et al by utilizing a period less than 2 microseconds, and a power density greater than 250 Watts/ci since it has been held

Art Unit: 2838

that where the general conditions of the claimed invention are disclosed in the prior art discovering the optimum or workable ranges of result effective variables involves only routine skill in the art.

10. Claims 33, 77, 81, and 86-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a power distributing apparatus as recited by claims 33, 77, 81, and 86-88 except for specifying that the duty cycle of the voltage transformation module is greater than 80% or 90%. Voltage transformation modules having a duty cycle greater than 80% or 90% were well known and old in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to have constructed the power distributing apparatus of Steigerwald et al to have any desired voltage transformation module duty cycle known and old in the art, such as greater than 80% or 90%, since this is part and parcel of the normal process of making a specific power supply for a specific purpose.

11. Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a voltage transformation module using an output current feedback signal as recited by claims 38 and 39 except for controlling the voltage transformation module using an output current feedback signal. Controlling the voltage transformation module using an output current feedback signal was an old and known expedient in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power

Art Unit: 2838

distributing apparatus of Steigerwald et al by controlling the voltage transformation module using an output current feedback signal in order to provide regulation of the output in a desired manner old and known in the art.

12. Claims 78-80 and 82-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steigerwald et al.

Steigerwald et al teaches a voltage transformation module as recited by claims 78-80 and 82-84 except for specifying various parameters of the voltage transformation module. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power distributing apparatus of Steigerwald et al by utilizing the various specified parameters of the voltage transformation module since it has been held that where the general limitations of a claim are disclosed by the prior art discovering the optimum or workable parameters involves only the ordinary and routine skill in the art at the time of the invention.

13. Applicant's arguments filed February 14, 2005 have been fully considered but they are not persuasive.

In response to the remarks concerning the novelty and patentability of the Factorized Power Architecture, the disclosed inventive concept of Factorized Power Architecture may very well be patentable however the claimed and recited invention does not adequately or sufficiently distinguish the inventive concept from and over the prior art as further explained below in relation to specific comments of applicants. Applicant is also reminded that the examiner is expected to give the language of pending claims the broadest reasonable interpretation.



In response to the remarks concerning the limitation of "separated by a distance", this limitation is overly broad and generic since apparently any distance will satisfy this limitation. For example, does the limitation require that the recited elements to be separated by some miniscule distance (1 micrometer?) or require that the recited elements to be separated by some substantial distance (1 megameter?) or some reasonable distance in between? Thus what applicant apparently thinks is a definite claim limitation is in fact a claim limitation without any definitiveness.

In response to the remarks concerning the limitation of "packaged separately", this limitation is also broad and generic since apparently any form of package separation will satisfy this limitation. For example, does the limitation require that the recited elements to be simply packaged on separate circuit boards but still within close proximity or require that the recited elements to be packaged in completely different and separate locations or something in between? Thus what applicant apparently thinks is a definite claim limitation is in fact a claim limitation without any clear definitiveness.

In response to the remarks concerning the disclosure of Steigerwald et al and the issue of "separation", in view of the above comments about the definitiveness of the "separation" limitations Steigerwald et al does indeed broadly and generically disclose "separating" the voltage regulation (30) and the voltage transformation (20) portions of the disclosed power supply system since the two are always discussed and shown as separate circuits with separate purposes.

In response to the remarks concerning the disclosure of Steigerwald et al and the issue of "load sharing", although the individual circuits 20 may not have a common load

(and thus load sharing) each of the circuits 20 do comprise plural DC/AC/DC converters (Qa/T1/CRa and Qb/T2/CRb) that share a common load. Thus DC/AC/DC converters Qa/T1/CRa and Qb/T2/CRb could reasonably be interpreted as "load sharing" as set forth broadly and generically by the pending claims.

In summary, if applicant were to incorporate more of the disclosed inventive concept into independent claims 1-5, 19-23, 76, 81, 85, 86, and 89-91 or to at least substantially clarify and further define the currently broad/generic claim recitations of independent claims 1-5, 19-23, 76, 81, 85, 86, and 89-91 corresponding to the important features of the disclosed inventive concept, favorable consideration would be given to the allowance of pending claims 1-91.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey L. Sterrett whose telephone number is (571)

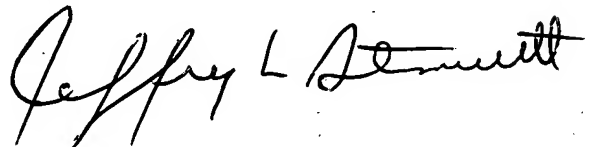
Art Unit: 2838

272-2085. The examiner can normally be reached on Monday-Thursday & 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571) 272-2084. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeffrey L. Sterrett  
Primary Examiner  
Art Unit 2838

A handwritten signature in black ink, reading "Jeffrey L. Sterrett". The signature is written in a cursive, flowing style with a large initial "J" and a long horizontal stroke at the end.